

CLAIMS

The invention claimed is:

1. A wind turbine vane including:
 - a) a first end;
 - b) a second end spaced apart from said first end, an approximate bisector of said first and said second ends defining a longitudinal axis of said vane; and
 - c) a leading edge connecting said first end and said second end, said leading edge approximating a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane substantially conformed to a surface of a spheroid having a polar axis skewed relative to said longitudinal axis of said vane.
2. The wind turbine vane of claim 1 further comprising a trailing edge connecting said first end and said second end and spaced apart from said leading edge, said trailing edge approximating a shape of a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane projected substantially conformed to a surface of said spheroid.
3. The wind turbine vane of claim 1 wherein said vane further comprises a surface approximating an ellipse, said ellipse being defined by a major axis arranged substantially transverse to said longitudinal axis of said vane and a minor axis arranged substantially normal to said major axis and said surface.
4. The wind turbine vane of claim 3 wherein a length of said minor axis defining said ellipse is greater proximate said first end of said vane than said length of said minor axis proximate said second end of said vane.
5. A wind turbine comprising:
 - a) a vane support arranged for rotation about an axis of rotation; and
 - b) a vane attached to said vane support, said vane including
 - i) a first end;

- ii) a second end spaced apart from said first end, an approximate bisector of said first and said second ends defining a longitudinal axis of said vane; and
 - iii) a leading edge connecting said first end and said second end, said leading edge approximating a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane and substantially conformed to a surface of a prolate spheroid, said spheroid having a polar axis skewed relative to said longitudinal axis of said vane.
- 6. The wind turbine of claim 5 wherein said vane is attached to said vane support proximate said first end of said vane and proximate said second end of said vane, said first and said second ends being arranged such that said longitudinal axis of said vane is skewed relative to the axis of rotation of said vane support.
- 7. The wind turbine of claim 6 wherein a portion of said longitudinal axis of said vane proximate midway between said first end and said second end is skewed relative to said axis of rotation of said turbine at an angle, said angle being greater than fifteen degrees and less than ninety degrees.
- 8. The wind turbine of claim 5 wherein said axis of rotation is substantially vertical.
- 9. The wind turbine of claim 5 wherein said axis of rotation is substantially horizontal.
- 10. The wind turbine of claim 5 wherein said vane surface further approximates an ellipse, said ellipse being defined by a major axis arranged substantially transverse to said longitudinal axis of said vane and a minor axis arranged substantially normal to said major axis and said longitudinal axis.
- 11. The wind turbine of claim 5 further comprising a trailing edge connecting said first end and said second end of said vane and spaced apart from said leading edge of said vane, said trailing edge approximating a shape of a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane and substantially conformed to said surface of said prolate spheroid.

12. The wind turbine of claim 11 wherein said vane is attached to said vane support proximate said first end of said vane and proximate said second end of said vane, said first and said second ends being arranged such that said longitudinal axis of said vane is skewed relative to said axis of rotation.
13. The wind turbine of claim 12 wherein a portion of said longitudinal axis of said vane proximate midway between said first end and said second end is skewed relative to said axis of rotation of said turbine at an angle, said angle being greater than fifteen degrees and less than ninety degrees.
14. The wind turbine of claim 11 wherein said axis of rotation is substantially vertical.
15. The wind turbine of claim 11 wherein said axis of rotation is substantially horizontal.
16. The wind turbine of claim 11 wherein said vane surface further approximates an ellipse, said ellipse being defined by a major axis arranged substantially transverse to said longitudinal axis of said vane and a minor axis arranged substantially normal to said major axis and said longitudinal axis.
17. The wind turbine of claim 16 wherein a length of said minor axis of said elliptical surface is greater proximate said first end of said vane than said length of said minor axis proximate said second end.
18. The wind turbine of claim 17 wherein said axis of rotation is substantially vertical.
19. The wind turbine of claim 17 wherein said axis of rotation is substantially horizontal.
20. The wind turbine of claim 17 wherein said vane is attached to said vane support proximate said first end of said vane and proximate said second end of said vane, said first and said second ends being arranged such that said longitudinal axis of said vane is skewed relative to said axis of rotation of said vane support.

21. The wind turbine of claim 17 further comprising another vane attached to said vane support, said another vane including another leading edge and another trailing edge, said leading edge of said vane being positioned radially further from said axis of rotation of said vane support than said another trailing edge.
22. The wind turbine of claim 21 further comprising a cap covering one of said first and said second ends of said vane and an end said another vane.
23. A wind powered energy converter comprising:
- a) a foundation;
 - b) a substantially vertical tower having a first end supported by said foundation and a second end;
 - c) a wind turbine rotationally mounted on said tower proximate said second end;
 - d) a power transmission apparatus having a first connection to said wind turbine and a second connection;
 - e) a variable mass flywheel rotatable by said second connection of said power transmission apparatus; and
 - f) an energy converter attached to said variable inertia flywheel to convert the rotational energy of said flywheel to another form of energy.
24. The wind powered energy converter of claim 23 wherein said variable mass flywheel comprises:
- a) a hollow torus arranged for rotation about a radial center;
 - b) a fluid, and
 - c) a fluid control to selectively control a flow of fluid into and out of said torus.
25. The wind powered energy converter of claim 23 wherein said wind turbine comprises:
- a) a vane support supported by said tower for rotation about an axis of rotation;
 - b) a first vane attached to said vane support, said first vane including:
 - i) a first end;

- ii) a second end spaced apart from said first end, an approximate bisector of said first and said second ends defining a longitudinal axis of said vane;
 - iii) a leading edge connecting said first end and said second end, said leading edge approximating a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane and conformed to a surface of a spheroid, said spheroid having a polar axis skewed relative to said longitudinal axis of said vane; and
 - iv) a trailing edge connecting said first end and said second end and spaced apart from said leading edge, said trailing edge approximating a shape of a sine wave having a neutral axis substantially parallel to said longitudinal axis of said vane and conformed to said surface of said spheroid; and
- c) another vane attached to said vane support, said another vane including another leading edge and another trailing edge, said leading edge of said first vane being positioned radially further from said axis of rotation than said another trailing edge.
26. The wind powered energy converter of claim 25 wherein said vane surface of said first vane further approximates an ellipse, said ellipse being defined by a major axis arranged substantially transverse to said longitudinal axis of said vane and a minor axis arranged substantially normal to said major axis and said surface.